

## WHAT IS CLAIMED IS:

1. A process for manufacturing a tire comprising a carcass reinforcement which is radial in the sidewalls and the reinforcement elements of which form with the circumferential direction and radially beneath a crown reinforcement which is composed of at least one layer of radial reinforcement elements forming an angle  $\pm \gamma_2$  with said direction, an angle  $\mp \beta_2$ , including initially manufacturing a cylindrical blank comprising all the components of the tire, by at least the following steps:

- a) laying at least one carcass reinforcement ply formed of radial reinforcement elements on the central part of diameter D of a cylindrical building drum;
- b) laying the annular bead elements, which are inextensible and have an internal diameter D<sub>3</sub>, the profiled elements and bead filler rubbers, and the bead reinforcement armatures, and turning up the edges of the carcass reinforcement ply to form carcass upturns;
- c) subjecting the central part of said carcass reinforcement ply to an angular variation of its radial reinforcement elements by pre-shaping on said drum T, by increasing the diameter D to a greater diameter D<sub>1</sub>, such that said radial reinforcement elements become oblique and form with the circumferential direction an angle  $\mp \beta_1$ , said angular variation of the carcass reinforcement ply over a width L being effected by means of a sleeve comprising at least one auxiliary shaping ply N of width L<sub>0</sub>, which is formed of textile or metallic elements coated in a vulcanized rubber mix and laid on the building drum T for the cylindrical tire blank;
- d) laying the profiled elements and rubber layers between the carcass reinforcement and the crown reinforcement, then radially to the outside laying at least one crown ply formed of reinforcement elements oriented relative to the circumferential direction respectively by the angles  $\pm \gamma_1$  ( $\mp \gamma_1$ ),  $\gamma_1$  being such that  $|\gamma_1| - |\beta_1| \leq 7^\circ$ ; and

e) laying the rubber mix(es) of the tread and shaping the cylindrical blank by bringing the internal diameter  $D_1$  thereof to the internal diameter  $D_2$  of the toric blank of the tire in the vulcanization mold and of the vulcanized tire.

2. A process according to Claim 1, wherein the diameter  $D_1$  is greater than the diameter  $D$  of the building drum and is between 0.95 times and 1.3 times the internal diameter  $D_3$  of the annular bead elements.

3. A process according to Claim 1, wherein the angular variation of the radial carcass reinforcement is effected by means of a cylindrical sleeve which is vulcanized and formed of two auxiliary plies  $N$ , the reinforcement elements of which form angles equal respectively to  $90^\circ$  and  $\pm \alpha$  or  $\pm \alpha$  and  $90^\circ$  with the circumferential direction.

4. A process according to Claim 1, wherein the at least one crown ply laid on the diameter  $D_1$  has a width greater than the width  $L_1$  of the shaping ply  $N$ .

5. A tire obtained by the process according to Claim 1, and comprising a carcass reinforcement anchored within each bead to an inextensible annular element and formed of independent reinforcement elements, arranged, firstly, radially or substantially radially between the bead and the crown of the tire and, secondly, with an orientation  $\mp \beta_2$ , relative to the circumferential direction, over at least the axial width  $L$  of the zone of parallelism between the carcass reinforcement and a crown reinforcement, said crown reinforcement being formed of at least one crown ply formed of reinforcement elements forming with the circumferential direction angles equal to  $\pm \gamma_2$  ( $\mp \gamma_2$ ),  $\gamma_2$  being equal in absolute value to  $\beta_2$  to within  $3^\circ$ , and the axial width of which is greater than the width  $L$ .

6. A tire obtained by the process according to Claim 1, and comprising a carcass reinforcement anchored within each bead to an inextensible annular element and formed of independent reinforcement elements, arranged, firstly, radially or substantially radially between the bead and the crown of the tire and, secondly, with an orientation  $\mp \beta_2$ , relative to the circumferential direction, over at least the axial width L of the zone of parallelism between the carcass reinforcement and a crown reinforcement, said crown reinforcement being formed of a crown ply formed of reinforcement elements forming with the circumferential direction an angle equal to  $\pm \gamma_2$ , said crown ply having edges which are turned up on themselves and the axial distance  $L_{31}$  between the upturns being greater than the width L

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